Plenary Session IIIa: The MDG Dataset of MAMS

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<app>-data-mdg.xls

- In order to follow the presentation, open the file
  - <app>-data-mdg.xls

Introduction

- Overview of data requirements in key MDG-related worksheets of the MAMS dataset
- The dataset is in the file

  <app>-data-mdg.xls
- Selective sheet-by-sheet comments focused on what the data mean. Comments use data in yem-data-mdg.xls.

Sets and Mappings

- sets-one-dimension
  - mdg1: irrelevant given that this project uses microsimulation to compute poverty and inequality indicators.
  - it is not mandatory to have two primary cycles
    - relevant when difficult to achieve MDG 2 for the whole primary cycle

Sets and Mapping – cont.

- trgyrmdgedu(ac,t1)
  - target year for MDGs; for education, translated into targets for earlier years for primary school entry and pass (promotion) rates
- mchdc(ac,acp)
  - mapping between government (1st index) and non-government (2nd index) human development (MDG and education) service commodities

Sets and Mapping – cont.

- mflabc(f,c)
  - mapping between labor type f and the highest cycle it has completed; i.e., population that has completed cycle c belong to labor type f (if they are part of the labor force)

Sets and Mapping – cont.

- mwageprem(c,f,fp)
  - for student in c next highest and current labor segments are f and fp, respectively
  - if student in c were to drop out of school without completing cycle c, then the student would belong to fp
    - related to the determinants of students behaviors – see previous presentation on MDG related elasticities
  - if student in c were to continue schooling sufficiently to climb one notch in terms of labor force type (by educational attainment), then the student would belong to f

Key MDG Indicators

- mdgkeyindic(ac,acp)
  - for mdg 5, unit = %; for other indicators, unit = share = %/100
  - data for "goal2015" is used in reports and in definition of simulation parameters
  - data for "mdg2-baseyr" is superfluous; overwritten in dmod2.gms using user-supplied data for entry and pass rates in primary school (parameter/sheet **shredu0**)
  - data for “mdg2-goal2015 is superfluos; see column goal in mdgeduscen

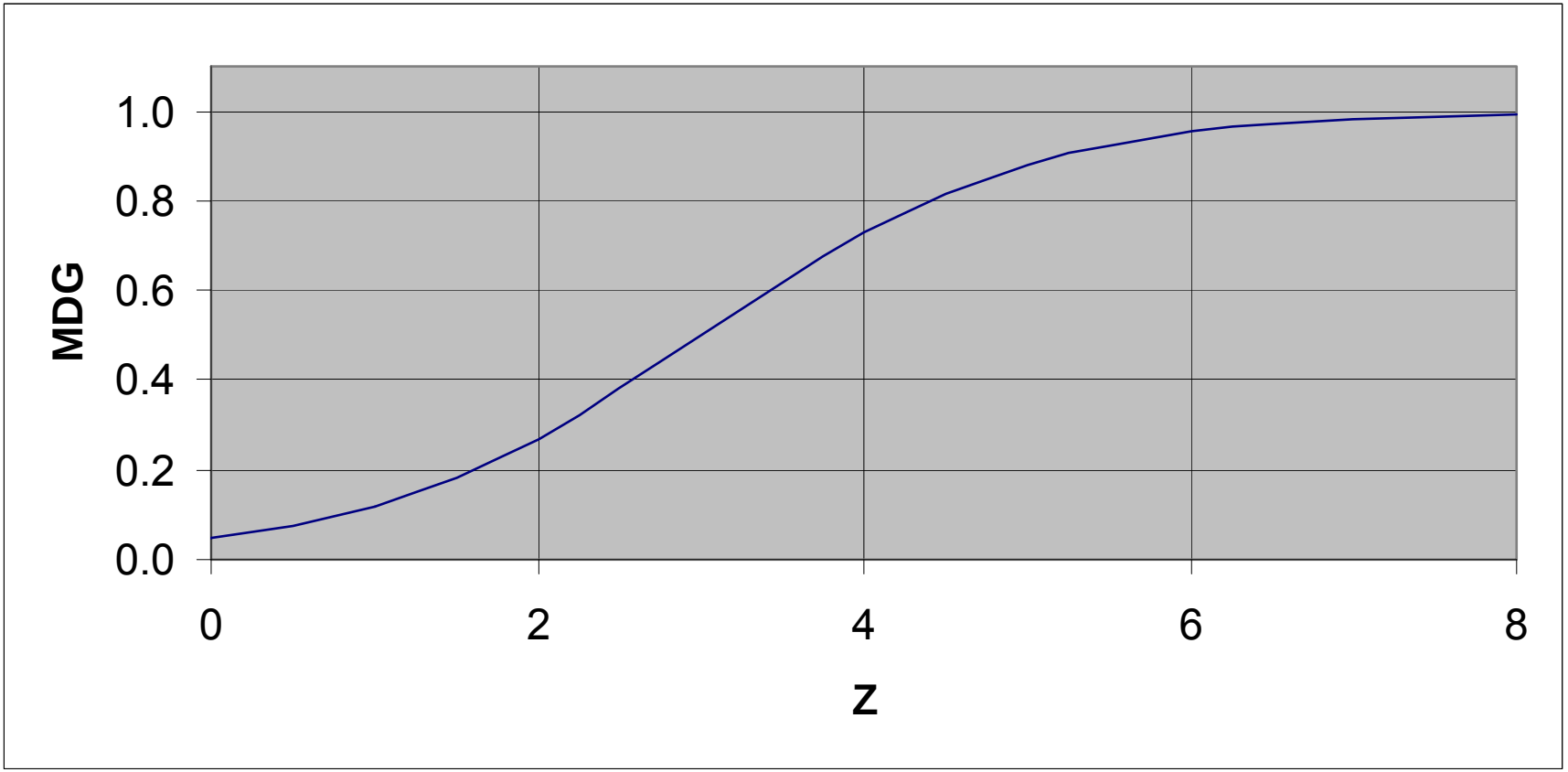
MDG “Production”

- MDGs are modeled as being “produced” by a combination of determinants:
  - services per capita (provided by government and non-government)
  - real per-capita consumption
  - evolution of other MDGs
  - public infrastructure capital stock

MDG "Production" – cont.

- The analysis uses a logistic function that permits:
  - imposition of limits (maximum or minimum) given by logic or country experiences
  - replication of base-year values and elasticities
  - calibration of a reference time path for achieving MDGs
  - diminishing marginal returns to the inputs
- Two-level function:
  - constant-elasticity function at the bottom: $Z = f(X)$
  - logistic function at the top: $MDG = g(Z)$

Logistic Function



Education and MDG 2

- MAMS tracks the evolution of enrollment disaggregated into three main cycles.
- Educational outcomes
  - for each cycle,
    - rates of entry, pass, repeat, and drop out
  - between cycles
    - share that continues

  are also functions of a set of determinants (including services per student); treatment similar to MDGs.

Education and MDG 2 – cont.

- Education is linked to the labor market
  - primary education – f-labn
  - secondary education – f-labs
  - tertiary education – f-labt
- MDG 2 (net primary completion rate) computed as product of 1st grade entry rate and primary cycle pass rates for the relevant series of years.

Goal-Achieving Scenario mdgeduscen(ac,acp,acpp)

- Data on this sheet and the sheet mdgeduelas is used in the calibration of the MDG and education functions.
- Each row shows a set of conditions that are made consistent as part of the calibration process
  - the "goal" is reached if the conditions in the preceding columns are reached in the year identified by "trgyrmdgedu" except for primary education, for which targeting will start in trgyrmdgedu - yrcyc + 1
    - for example, if trgyrmdgedu = 2015 and yrcyc('c-edup1') = 6, then the targeting of primary education outcomes starts from : 2015 - 6 + 1 = 2010

Goal-Achieving Scenario mdgeduscen(ac,acp,acpp) – cont.

- Interpretation by column for mdgeduscen
  - c-hlthg: ratio between per-capita real health services in target and base years
  - c-wtsn: ratio between per-capita real water-sanitation services in target and base years
  - edu-qual: ratio between educational quality (real services per student) in target and base years
  - f-capoinf: ratio between government capital stock in infrastructure in target and base years
  - qhpc: ratio between real household consumption per capita target and base years

Goal-Achieving Scenario mdgeduscen(ac,acp,acpp) – cont.

- Interpretation by column for mdgeduscen
  - mdg4: ratio between mdg4 indicator in target and base years
  - mdg7a: ratio between mdg7a indicator in target and base years
  - mdg7b: ratio between mdg7b indicator in target and base years
  - wage-prem: ratio between relative wages in next higher and current labor segments in target and base years;
  - goal: value reached for the targeted indicator in 2015

Goal-Achieving Scenario mdgeduscen(ac,acp,acpp) – cont.

- Base-year values for the goal indicators (identified in columns 1 and 2) are found on the following sheets:
  - mdgkeyindic: mdg4, mdg5, mdg7a, mdg7b
  - shredu0: other, education-related indicators

An Example: mdgeduscen Based on Needs Assessment

- The Yemen Needs Assessment provides estimates of government spending needs (current + capital) for the period 2006-2015
  - compute annual average
  - compute ratio between required and observed per capita government spending
  - introduce the ratio en mdgeduscen

An Example: mdgeduscen Based on Needs Assessment – cont.

		c-health	c-wtsn	edu-qual	f-capoinf	qhpc	mdg4	mdg7a	mdg7b	wage-prem	goal
mdg4	**dummy**	4.077			1.230	1.238		1.129	1.254		0.041
mdg5	**dummy**	4.077			1.230	1.238		1.129	1.254		0.088
mdg7a	**dummy**		3.840		1.230	1.238					0.659
mdg7b	**dummy**		3.840		1.230	1.238					0.597
g1entry	**c-edup1**			2.059	1.230	1.238	0.552			1.000	0.980
pass	**c-edup1**			2.059	1.230	1.238	0.552			1.000	0.999
pass	**c-edup2**			2.059	1.230	1.238	0.552			1.000	0.999
pass	**c-edus**			1.457	1.230	1.238	0.333			1.000	0.980
pass	**c-edut**			3.112	1.230	1.238	0.333			1.000	0.888
grdcont	**c-edup2**			2.059	1.230	1.238	0.552			1.000	0.999
grdcont	**c-edus**			1.457	1.230	1.238	0.333			1.000	0.888
grdcont	**c-edut**			3.112	1.230	1.238	0.333			1.000	0.550

MDG Module Elasticities

- mdgeduelas(ac,acp,acpp)
  - units for determinants (3rd index) identified in comments on mdgeduscen (preceding sheet)
  - elasticities are negative for cases where an increase (decrease) in the determinant leads to a decrease (increase) in the indicator (ceteris paribus)

Other Data

- ext_mdg0(mdg)
  - values should represent extreme values according to international experience (≈ lowest country-level mortality rates in global databases)
- fpelas00(mdg,f,a)
  - a negative value indicates that productivity of labor type f in activity a declines in response to improved health (with the mdg4 indicator used as proxy)

Education Data

- qenr00(c)
  - base-year value for number of enrolled in cycle c by year
- qg1entncoh0(c,t1)
  - number of non-cohort entrants to 1st grade in primary cycle (c)
- qenrnew00(c)
  - new students in cycle c in base year

Education Data – cont.

- shredu0(behav,c,t11)
  - for base year: data needed for all rows
  - for years preceding base, data only needed for the (first) primary cycle:
    - shredu0('g1entry', 'c-edup1',t)
      for the single year baseyr - yrcyc(‘c-edup1’) + 1
- shredu0('pass','c-edup1',t); data needed for all years up to baseyr starting from the year baseyr - yrcyc(‘c-edup1’) + 1.

How MAMS Computes MDG 2

- The MDG2 is defined as the product of the rates of entry and passing during the years of study for the cohort that is scheduled to graduate from (1st) cycle primary in t.
- For example, in test-data-mdg.xls
  - MDG 2 =
    g1entry1999 * pass1999 * pass2000 *
    pass2001 * pass2002
  - MDG 2 =
    0.740 * 0.777 * 0.777 * 0.777 * 0.777 = 0.269

Education Data – cont.

- shrgrdcyc0(c)
  - among the students in cycle c who pass (their current grade), the share that graduates from the cycle (in base-year)
    = [students graduating from c] /
    students who pass their current grade in c]
  - note: [students who pass their current grade c-edup (base-year is 2002)] =
    qenr00('c-edup1‘)
    * shredu0('pass','c-edup1','2002')

Education Data – cont.

- eduqualgrw(c)
  - annual growth (improvement if >0) in quality for educational cycle c (units = shares; e.g. write 1% as 0.01)
  - definition of “quality”: real services per student in cycle c (irrespective of whether service is provided by government or non-government sectors)
  - data provided on this sheet only matter if govspnd0(c,t) = 4; see the file <app>-data.general.xls

Education/Labor Data

- shrlabent0(c,t1)
  - labor-force entry share among students leaving school during or at graduation from cycle c
  - note: value is zero for cycles for which departing students are too young to be part of the labor force

Education/Labor Data – cont.

- shrlabent20(f,t1)
  - share of labor-force-age cohort outside school system that enters labor force as type f
  - shrlabent20 applies to population who never went to school or left school before reaching labor force age (typically those who only completed primary education or less); when this population reaches labor-force age, the indicated share enters the labor force
  - value is zero for labor categories that require an education level so high that those who acquire it already are in labor-force age at graduation

Education/Labor Data – cont.

- deprlab(f,t1)
  - depreciation (attrition rate) for labor factor f in t1
  - main reasons for depreciation (attrition): retirement due to old age or illness; net out-migration
  - MAMS imposes an exogenous labor-force participation rate -- among those in labor-force age who are not in school
    - see the parameter labpartrat0 in the file <app>-data-general.xls; deprlab is scaled endogenously to achieve this participation rate
    - given this, for deprlab only relative values across labor types matter.
  - suggestion: if labor-type-specific data is not available, introduce plausible values (e.g. 0.02 = 2%) for all labor types.